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ABSTRACT

This paper describes a study conducted on a group of reverse transfer students (students that enroll at two-year colleges after attending a four-year baccalaureate institution) to increase knowledge about this growing population and address the shortcomings of previous research. Almost 1,400 reverse transfer students were sent surveys. According to N.K. Renkiewicz, there are two types of reverse transfer students: the completers (degree-earners before transfer) and the non-completers (non-degree earners). The study's response rate was 63.5% (885 students), 149 completers and 736 non-completers. Findings include: (1) non-completers gave significantly more importance to completing an associate's degree, improving basic skills, completing courses for academic transfer, and improving grade point average; (2) completers gave more importance to acquiring skills for a career change, obtaining training related to a current job, and attending a college close to the work place; (3) completer students, whose mean age was 37, were significantly older than non-completers, whose mean age was 29; and (4) students from both groups had high grade point averages and appeared to be making progress toward program completion. In addition, the researchers confirmed through factor analysis and two-group stepwise discriminant analysis that the instrument is valid for use in reverse transfer research. The author discusses recruitment and student services implications based on the study's results. The survey is appended. Contains 20 references and 4 tables. (CJW)

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Community College Reverse Transfer Students:

A Discriminant Analysis of Completers and Noncompleters

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The American higher education system is comprised of over 3,700 colleges and universities of all types (American Council on Education, 1999). Included within this figure are approximately 1,250 two-year community colleges (American Association of Community Colleges, 1997). To survive in the competitive American post-secondary sector, community colleges must attract and serve individuals from a pool of potential students whose demographic characteristics are changing rapidly. For example, nontraditional students (e.g., older students, single-parent students, working students) make up an ever-increasing proportion of the national freshman cohort (Cohen & Brawer, 1996). It is important for community college administrators and faculty to be knowledgeable about the characteristics and motivations of nontraditional students for at least two reasons: (a) community colleges must be competitive in recruiting new students and (b) administrators and faculty are responsible for creating academic and student services that serve nontraditional students well.

The focus of this study was that group of nontraditional community college students known as reverse transfer students. Defined operationally, reverse transfer students are individuals who enroll first at a four-year baccalaureate college or university and transfer to a two-year community college (Heinze

& Daniels, 1970; Lee, 1975; Mitchell & Grafton, 1985; Renkiewicz, Hirsch, Drummond, M. E., & Mitchell, 1982; Winter & Harris, 1999).

The reverse transfer population encompasses two broad subgroups: completers and noncompleters (Kuznik, Maxey, & Anderson, 1974; Swedler, 1983; Hogan, 1986). Completer reverse transfers are individuals who earned a baccalaureate degree before transferring to a community college. Noncompleter reverse transfers are students who transferred to a community college without completing a bachelor's degree.

Although researchers have been aware of the reverse transfer phenomenon for at least forty years (Clark, 1960), the number of studies examining reverse transfers is small, with much of the existing research consisting of field survey reports in unpublished manuscripts and dissertations. Also, with few exceptions (e.g., Winter & Harris, 1999), the existing reverse transfer research is devoid of reporting for the procedures used to validate the instruments used for data collection, or to assess the instruments for reliability. The scant attention given to instrument validation in the existing research calls into question the accuracy and usefulness of the findings reported. Further, existing research does not capitalize on the potential knowledge to be gained by multivariate analysis. Most

existing studies report only descriptive statistics or univariate analyses.

Purpose

The purpose of the present research was to increase knowledge about reverse transfer students and address the methodological shortcomings described above. This study had two objectives. The first objective was to assess the construct validity of one of the best-known survey instruments used to gather information about reverse transfer students. The instrument examined was the field survey instrument originally developed by Renkiewicz et al. (1982) and used in several subsequent investigations.

The second objective was to study a statewide population of reverse transfer students using a multivariate approach. The procedure used in this phase of the research was discriminant analysis, which made it possible to identify predictor variables that differentiate (discriminate) between the two reverse transfer sub-groups (completers, noncompleters). The goal of the multivariate analysis was to expand knowledge about reverse transfer students to (a) inform student recruitment initiatives and (b) provide information to support administrators and faculty who design student services and academic programs.

Methods

This study was a field survey designed and implemented according to procedures recommended by Fowler (1988) and Dillman (1978). The multivariate methods used for instrument validation and data analysis were, respectively, factor analysis and discriminant analysis.

Participants

The participants in this research were completer and noncompleter reverse transfer students who responded to a statewide survey of reverse transfer students enrolled at the 14 community colleges in Kentucky. Based on a power analysis to determine the size of the mailing and the minimum sample required, 1,392 students received the survey questionnaire used for data collection and 885 students (63.5%) responded. Chi-square tests served to check for response bias related to such factors as gender (male, female), race (White, minority), marital status (single, married), and work status (full-time, part-time). The Chi-square tests were not significant, indicating the sample was representative of both the completer and the noncompleter reverse transfer populations.

The participants included 149 completer reverse transfer students (male = 59, female = 90) and 736 noncompleters (male = 238, female = 498). Among the completers there were 139 Whites, 4 African Americans, 4 Asian Americans, and 2 Native Americans.

The noncompleter group was comprised of 641 Whites, 75 African Americans, 7 Asian Americans, 7 Hispanic Americans, and 6 Native Americans. Seventy-two completers were married and 77 were single. Two hundred and sixty-nine noncompleters were married and 467 were single. Among the noncompleters, 45.5% were working full-time and 33.1% were working part-time. Among the completers, 58.1% were working full-time and 27.0% were working part-time. Other descriptive data for the participants appear in Table 1.

Insert Table 1 about here

Instrumentation

The instrument used in this study was a field survey originally developed by Renkiewicz et al. (1982) and modified for use in two subsequent studies (Klepper, 1990; Winter & Harris, 1999). Winter and Harris (1999) established that the survey items have excellent test-retest reliability (mean item coefficient of stability = .89). The survey included items for personal data about the participants (see previous section) and sections with quantitative items related to 17 reasons for attending a community college and 6 goals for attending a community college. The items related to reasons and goals had 5-point Likert-type scales (1 = Not at all important,

5 = Extremely important). The 23 items for reasons and goals appear in the Appendix to this manuscript.

Data Analysis

The procedure used to assess construct validity was factor analysis. The specifications (Tabachnick & Fidell, 1996) for the factor analysis were: (a) alpha = .05, (b) principal axis factoring, (c) minimum factor loading criterion = .30, and (d) orthogonal (varimax) rotation (Gorsuch, 1983). The minimum criterion for factor extraction (eigenvalue = 1.0) was the decision criterion recommended by Stevens (1992).

The procedure used to identify variables that differentiated completer reverse transfers from noncompleter reverse transfers was two-group stepwise discriminant analysis. The predictor (discriminating) variables were demographic items and quantitative Likert-type scale responses from the survey instrument (see above). The criterion (grouping) variable was participant reverse transfer status (completer, noncompleter).

Results

The factor analysis results provided insights relative to the construct validity of the survey instrument. The stepwise discriminant analysis provided a solution that rendered a profile for both the completer reverse transfers and the noncompleter reverse transfers.

Construct Validity

The factor analysis procedure yielded a three-factor solution that explained 43.6% of the variance in the 23 variables (i.e., survey items) analyzed. Results of the factor analysis appear in Table 2. Two additional factors (Factor 4 and Factor 5) that failed to meet the minimum decisional criterion (eigenvalue = 1.0) also appear in Table 2 for reasons explained below. Table 2 displays the rotated factor matrix. As explicated by Tabachnick and Fidell (1996), the coefficients in the factor matrix represent correlations between the variables (survey items) and the factors derived from the factor analysis procedure. The items in the matrix are coded to represent either a goal (G) or a reason (R) and are cross-referenced by number to the items displayed in the Appendix.

Insert Table 2 about here

As can be seen from the matrix displayed in Table 2, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = .858) and Bartlett's test of sphericity (Bartlett's test = 9190.81 (df = 253, $p < .0001$) indicated, respectively, that (a) the sample was adequate for conducting a factor analysis and (b) the correlation matrix was not an identity matrix (the result required for performing a factor analysis).

The factors displayed in Table 2 represent constructs that underlie the 23 quantitative variables on the survey instrument. One objective of this study was to construct-validate the quantitative survey items; that is, determine precisely what the items measure. The interpretation of the factors is as follows. Nine items loaded significantly on Factor 1, which was interpreted as representing "knowledge acquisition and self-improvement". Four items loaded on Factor 2, which represented "institutional convenience". Factor 3 represented "improving performance and preparing for transfer". Although Factor 4 and Factor 5 did not explain enough variance in the survey items to meet the decision criterion, it should be noted that both factors appear to represent identifiable constructs. Factor 4 can be interpreted as representing "updating current skills" and Factor 5 can be interpreted as representing "community college advantages" (e.g., reputation, quality, open admissions, low cost). Having assessed the construct validity of the survey items, the next analytical step was to determine the usefulness of the items for predicting participant membership in the two reverse transfer groups (completer, noncompleter).

Discriminant Analysis

Two-group stepwise discriminant analysis served to predict participant group membership. The Wilk's Lambda statistic was used to test the multivariate significance of the predictor

variables. The results displayed in Table 3 indicated that eight variables were significant predictors of reverse transfer status (see Appendix for wording of reasons and goals).

Insert Table 3 about here

The canonical correlation (.558) between the linear combination of the eight significant predictors and the criterion variable (reverse transfer status) revealed that the predictor variables explained 31.1% ($.558^2$) of the variance in reverse transfer status. The standardized discriminant function coefficients in Table 3 revealed the relative contribution of the predictors for explaining variance in reverse transfer status. The coefficients with the highest absolute values made the most significant contribution to predicting group membership. The coding for the grouping variable (reverse transfer status) was: completer = 1 and noncompleter = 2. Therefore, the positive discriminant function coefficients in Table 3 indicate greater likelihood of participants being members of the noncompleter group, while negative coefficients indicate greater likelihood of the participants being members of the completer group.

The following distinctions between the two reverse transfer groups emerged from the discriminant function. Noncompleters

(see Table 3) gave significantly more importance to completing an associate's degree (Goal 1), improving basic skills (Reason 8), completing courses for academic transfer (Goal 2), and improving one's GPA (Reason 7). Completers gave more importance to acquiring skills for a career change (Reason 9), obtaining training related to a current job (Reason 5), and attending a college close to the work place (Reason 14). Also, when compared to noncompleters, the completer students were significantly older than were the noncompleter students, a fact that is also evident from the means for age shown in Table 1. The mean age of the completers was 37.4. The mean age of the noncompleters was 29.3.

The classification matrix displayed in Table 4 indicates the degree of accuracy of the discriminant function, and the linear combination of significant predictor variables, for predicting the group membership (completer, noncompleter) of the participants. Correct predictions are on the diagonal in Table 4 from the upper left cell to the lower right cell. The data in Table 4 indicate the following percentages of correct predictions for group membership: completer group = 75.2% and noncompleter group = 84.4%. The percent of correct predictions for the total sample was 82.8%, which indicates the predictor variables in Table 4 rendered a high degree of accuracy in

discriminating between the completer and noncompleter reverse transfer students.

Limitations

As is the case with most research, the results of this study should be interpreted with caution relative to (a) making generalizations to other geographical settings and (b) recommending changes in administrative practice. The primary limitation of the present study relates to the research site. The findings from this research derive from a statewide sample from a single state in the Midwest (Kentucky). Reverse transfer students from other geographical regions might have responded to the survey items differently than did the participants in this study.

Discussion

Despite the limitation noted above, this study rendered information useful to researchers interested in the reverse transfer phenomenon and faculty and administrators interested in better serving reverse transfer students.

Implications for Research

From a measurement perspective, this study confirms that the survey instrument originally developed by Renkiewicz et al. (1982) and modified in subsequent investigations has now been assessed for both reliability (Winter & Harris, 1999) and construct validity. Based on this information, the instrument is

recommended for use in reverse transfer research designed to determine why individuals transfer from four-year institutions to community colleges. Studies similar to the one reported here should be conducted in other regions of the country to develop a national profile of reverse transfer students.

The multivariate analysis conducted in this study revealed that, of the demographic variables examined, age is the only significant discriminator between completer and noncompleter reverse transfers. However, the task of analyzing the influence of personal and demographic factors is still a work-in-progress. Future reverse transfer investigations should examine the influence of other personal characteristics. Variables of interest include academic performance variables such as high school class standing and standardized test scores (SAT and ACT). Also, new research is needed to address the impact of additional family and economic factors. An excellent research focus would be to address the influence of factors such as student income, spousal income, household income, and student loan debt. Variables such as these undoubtedly have an impact on student academic success and program completion.

Implications for Practice

From the perspective of faculty and administrators, the first point that emerges from the data is that both groups of reverse transfer students appear to be a desirable focus of

student recruitment efforts. As the data in Table 1 demonstrate, students from both groups have high GPAs and appear to be making reasonable progress towards program completion in terms of credit hours enrolled and credit hours completed. The students' academic achievements are especially noteworthy given that many of these students are married, working, or both.

As the discriminant analysis reported earlier suggests, community college recruitment efforts that target noncompleter students should emphasize programs that contribute to earning an associate's degree, improving basic skills, and transferring successfully to a baccalaureate institution. Recruitment programs that target completer students should emphasize skill acquisition for a career change, training useful on the current job, and convenience of the community college's location within the local community.

There are also practical implications related to community college student services. Both groups of reverse transfer students have many off-campus responsibilities including work and family. Accordingly, colleges desiring to serve these students should consider such services as flexible class locations, on-line courses and student advisement, day care, and evening and weekend classes. The participants indicated clearly that they appreciate the convenience advantages offered by community colleges (e.g., location, scheduling, admissions, low

cost). These factors should be regarded as competitive advantages for community colleges competing with four-year colleges for enrollment.

Conclusion

Reverse transfer students appear to represent a growing student population on the national scene (Brim & Achilles, 1976; Clark, 1982; Winter & Harris, 1999). From their review of previous reverse transfer research, Winter and Harris (1999) determined that estimates of the proportion of reverse transfers in the general population of community college students are as high as 20% (Hogan, 1986; Mitchell & Grafton, 1985). If this estimate is correct, the national reverse transfer population may exceed 600,000 students (Winter & Harris, 1999). Given the estimated population of the reverse transfers, and their potential impact on future community college enrollments, it is hoped that the findings from this study will stimulate renewed interest in, and inquiry about, this unique group of nontraditional students.

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Table 1

Descriptive Statistics for Study Participants

Variable	Mean (Median)	SD	Range
Completers (n = 149)			
Age	37.4 (37.0)	12.0	20.0-77.0
Number Dep. Children	0.8 (0.0)	1.1	0.0-5.0
Credit Hrs Completed	23.2 (23.0)	25.7	1.0-99.0
Grade Point Average	3.5 (3.5)	0.5	1.0-4.0
Credit Hrs Enrolled	5.5 (6.0)	3.8	1.0-18.0
Noncompleters (n = 736)			
Age	29.3 (29.0)	8.9	19.0-67.0
Number Dep. Children	0.6 (1.0)	0.9	0.0-4.0
Credit Hrs Completed	31.9 (32.0)	24.6	1.0-99.0
Grade Point Average	3.2 (3.2)	0.6	1.0-4.0
Credit Hrs Enrolled	9.1 (9.0)	4.3	1.0-19.0
Total (N = 885)			
Age	30.7 (31.0)	10.0	19.0-77.0
Number Dep. Children	0.6 (1.0)	0.9	0.0-5.0
Credit Hrs Completed	30.5 (30.0)	25.0	1.0-99.0
Grade Point Average	3.2 (3.2)	0.6	1.0-4.0
Credit Hrs Enrolled	8.7 (8.0)	4.4	1.0-19.0

Table 2

Rotated Factor Matrix (N = 885)

Survey Item	Factor				
	1	2	3	4	5
Learn new skills (G6)	.86				
Prepare for career advancement (G4)	.80				
Upgrade skills (G5)	.75				
Learn about new technologies (R10)	.65				
Courses for growth/interest (G3)	.56				
Occupational instruction (R3)	.55				
Skills for job change (R9)	.51				
Associate's degree (G1)	.51				
Increase self-confidence (R2)	.32				

Table 2 continued

Rotated Factor Matrix

Survey Item	Factor				
	1	2	3	4	5
Convenient location (R12)		.85			
Convenient times (R11)		.66			
Close to home (R13)		.64			
Close to work (R14)		.57			
Prepare for transfer (R1)			.75		
Transfer courses (G2)			.73		
Improve GPA (R7)			.47		
Improve basic Skills (R8)			.45		
Update existing skills (R6)				.74	
Training related to current job (R5)				.66	

Table 2 continued

Rotated Factor Matrix

Survey Item	Factor				
	1	2	3	4	5
Good reputation (R17)					.61
Quality instruction (R4)					.48
Minimal admissions requirements (R15)					.32
Low cost (R16)					.31

Note. Letters and numbers in parentheses reference to the reasons (R) and goals (G) survey items shown in the Appendix.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = .858.

Bartlett's Test of Sphericity = 9190.81 (df = 253, $p < .0001$).

Table 3

Standardized Discriminant Function Coefficients

Predictors	Function 1	Wilk's Lambda
Goal 1	.725	.785 *
Reason 9	-.556	.738 *
Reason 8	.393	.710 *
Age	-.359	.713 *
Goal 2	.282	.703 *
Reason 5	-.270	.700 *
Reason 14	-.244	.700 *
Reason 7	.244	.698 *

Note. The solution for a two-group discriminant analysis yields a single discriminant function.

Canonical Correlation = .558

N = 885

* P < .0001

Table 4

Classification Matrix

Actual Group Membership	n	Predicted Group Membership CRT	NCRT
CRT	149	112	37
		75.2%	24.8%
NCRT	736	115	621
		15.6%	84.4%

Note. The percent of cases classified correctly for the total sample was 82.8%.

N = 885

Appendix

Survey Items for Reasons and Goals for Attending a Community College

Reasons for Attending a Community College

1. Prepare to transfer to a four-year college or university.
2. Increase my self-confidence.
3. Receive occupational instruction leading to employment upon graduation.
4. Quality of instruction.
5. Obtain training related to my current job.
6. Update existing job skills.
7. Improve my grade point average.
8. Improve basic skills (reading, writing, mathematics).
9. Acquire skills for a career change.
10. Learn about new technologies.
11. Courses scheduled at convenient times.
12. Courses scheduled at convenient locations.
13. College is close to my home.
14. College is close to my work.
15. Minimal admissions requirements.
16. Low cost.
17. College has a good reputation.

Appendix continued

Goals in Attending a Community College

1. Complete an associate's degree.
2. Complete courses to transfer to another institution.
3. Complete courses for personal growth or interests.
4. Prepare for career advancement.
5. Upgrade skills or knowledge.
6. Learn new skills